

INTELLECTUAL CAPITAL REPORTING AND DISCLOSURE IN THE ANNUAL REPORTS OF ROMANIAN MANUFACTURING LISTED COMPANIES – METHODOLOGY AND DISCUSSION OF RESULTS

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In our study we have proposed to measure the extent of intellectual capital disclosure using annual reports as the source of our documentation. The empirical analysis is twofold: firstly we are interested in analyzing the value of intellectual capital using a value-based approach, through the evolution of market to book value ratio over the selected period and secondly we carry out a content-based analysis of the complete annual reports of the selected companies over the five year period and calculate an intellectual capital disclosure index. Looking at the figures we can conclude that only 50% of Romanian manufacturing companies hold intellectual capital assets for the period analysed and also they are mostly disclose information that refers to relational capital. The intellectual capital voluntary disclosure index for the 2005-2009 years for the sampled companies is on average almost 19%, considered very low.

Key words: knowledge, intellectual capital reporting, annual reports, listed companies, disclosure

JEL codes: M41, M10, G14, D83

1. Introduction

This study main objective is to highlight several aspects in regard to intellectual capital components reported voluntarily by Romanian manufacturing listed companies in their annual reports and to investigate, by following the evolution of market to book value ratio, the tendency of the companies surveyed to create value through their knowledge assets. Motivation in selecting this topic of research lies in our interest in financial reporting of today, especially in voluntary disclosure practices of domestic listed companies. In our approach that mainly focused on analyzing the annual reports of selected listed companies we have proposed two sections of the research and three research questions.

Voluntary reporting activities of several important European firms have generated in the last decades a rethinking of the traditional financial accounting practice and disclosure. Taking into account the results of different studies found in the literature and the trends in financial reporting of today, we consider that our study contributes to understanding intellectual capital reporting practice of Romanian listed companies, revealing the fact that despite the very low disclosure index of knowledge assets it can be recognized an increasing interest of these entities in the last three years in disclosing information regarding this kind of hidden values. As Petty et al. (2009) suggests the greatest obstacles for firms wishing to adopt intellectual capital reporting are: the lack of consistency in methodologies for disclosure and the difficulties in assigning meaningful and reliable quantitative values to components of knowledge assets. We agree with the above mentioned authors which considered that while these obstacles persist, it is likely that few

companies will see any benefits accruing to them as a reward for their efforts in extending voluntary disclosures of hidden values.

In the next sections of our work we have presented the research methodology and design, the questions we have formulated, the discussion and analysis of the obtained results and finally we mentioned the conclusions of our investigative study and the limitations of the research.

2. Methodology and research design

Our paper analyzes the evolution of market to book value ratio for the sampled companies in the period 2005-2009 and the voluntary disclosure of intellectual capital in the same period. First we have to mention that we have selected our sample companies looking for such industries that are consistent in intellectual capital and actually we have searched for information regarding intangible assets disclosed in the annual reports. Our study has two major objectives. First to investigate the evolution of market to book value ratio and secondly to analyze what information about intellectual capital are voluntarily disclosed through annual reports by sample Romanian listed companies.

In the present paper we have used content analysis for investigating annual reports of the nineteen companies listed on Bucharest Stock Exchange (BSE), first, second and third tier, selected after we have established the main criteria for sampling. We have chosen our sampling criteria starting from the hypothesis already tested in previous research that companies' size is an important predictor of corporate disclosure behaviour (Buzby, 1975; Raffournier, 1995; Graven and Marston, 1999; Stolowy and Ding, 2003) and large companies traded on a capital market should have the most complete annual reports and a larger range of voluntary information disclosed. Out of the total listed companies on BSE we selected those who do business in the manufacturing industry relying on the assumption that companies that activate in IT and manufacturing industry are more likely to disclose information about intellectual capital and corporate value. We have found forty-four companies in the manufacturing industry listed on the first, second and third category, out of which we have selected our sample according to the following criteria: market capitalization, own web-site, annual reports and audit reports. Thus, our sample consists of nineteen companies from manufacturing industry, most of them doing business in the chemical industry. Companies in the sample were selected on the bases of their knowledge-based assets and incentives to report on intellectual capital. For measuring the intellectual capital index we have analysed the content of annual reports of sample companies. The empirical analysis is twofold: firstly we are interested in analyzing the value of intellectual capital using a value-based approach, through the evolution of market to book value ratio over the selected period and secondly we carry out a content-based analysis of the complete annual reports of the companies over the five year period and calculate an intellectual capital disclosure index inspired by the model of Li, Pike and Haniffa (2007). Annual reports are the main annual source of communication between the company and its external investors through these means the company publishes investment related information. The annual reports examined in this paper are based on the 2005, 2006, 2007, 2008 and 2009 fiscal years.

Companies were surveyed between July 2010 and March 2011 to find out whether they have voluntarily disclosed information about intellectual capital or knowledge assets. Data was gathered from the following sources: www.bvb.ro, www.cnvm.ro, www.ktd.ro, and www.kmarket.ro, sites providing stock exchange information and own web-sites of companies listed on first and second and third tiers at BSE; we have collected the data for determining the market capitalization of the companies listed on BSE and also a part of the accounting and financial information regarding the financial statements and annual reports for the years 2005, 2006, 2007, 2008 and 2009; the accounting and financial information obtained from the site of the Romanian Ministry of Economy and Finance.

*The sampled companies**Table no. 1*

No	Symbol name on BSE	Company	No	Symbol name on BSE	Company
1	AMO	AMONIL SA	11	TRP	TERAPLAST SA
2	AZO	AZOMUREŞ SA	12	PREH	PREFAB SA
3	OLT	OLTCHIM SA	13	CBC	CARBOCHIM SA
4	STZ	SINTEZA SA	14	CEON	CEMACON SA
5	ATB	ANTIBIOTICE SA	15	CMCM	COMCM SA
6	BIO	BIOFARM SA	16	ALR	ALRO SA
7	SCD	ZENTIVA SA	17	COS	MECHEL TÂRGOVIŞTE SA
8	MJM	MJ MAILLIS SA	18	ART	TMK-ARTROM SA
9	PPL	PRODPLAST SA	19	ZIM	ZIMTUB SA
10	ROCE	ROMCARBON SA			

Our research is a quantitative study organized in two main sections. In the first section we tried to identify which firms in the sample shows a market to book value ratio near or greater than 1 assuming that those companies have greater intellectual capital compared to other sampled companies. On the second level of our investigative study we have constructed an intellectual capital disclosure index based on a content analysis of annual reports and the research methodology found in Li, Pike and Haniffa (2007). The research instrument adopted by the mentioned authors grouped the intellectual capital items into three categories: human capital items, relational intellectual capital items and structural intellectual capital items. Our approach in scoring the items can be found in the research methodology of Li, Pike and Haniffa (2007) and essentially consists in assigning the score 1 if the information is disclosed in the annual report or the score 0 if the information is not disclosed. The scores for each item were then added and equally weighted to derive a final score for each company. The intellectual capital disclosure index (ICD) for each company is calculated as follows:

$$ICD_j = \frac{\sum_{i=1}^{n_j} X_{ij}}{n_j} * 100$$

Where n_j = number of items (61) for j company (19), found in the annual reports of each company, for the period between 2005 and 2009 fiscal years;

X_{ij} = 1 if the i item is disclosed

0 if the i item is not disclosed

The table bellow presents the items scored for each year disclosed in the annual reports of the sampled companies.

Information categories regarding intellectual capital disclosure

Table no. 2

		2005	2006	2007	2008	2009
No	ITEMS - HIC					
1	Number of employees	94,74%	100,00%	100,00%	100,00%	100,00%
2	Employee age	0,00%	0,00%	0,00%	0,00%	5,26%
3	Employee diversity	52,63%	57,89%	52,63%	63,16%	73,68%
4	Employee equality	0,00%	0,00%	0,00%	0,00%	5,26%
5	Employee relationship	0,00%	5,26%	5,26%	10,53%	5,26%
6	Employee education	42,11%	52,63%	52,63%	57,89%	52,63%
7	Skills/Know-how/Expertise/Knowledge	0,00%	0,00%	0,00%	0,00%	0,00%
8	Employee work related competences	5,26%	10,53%	5,26%	15,79%	5,26%
9	Employee work-related knowledge	0,00%	10,53%	5,26%	15,79%	5,26%
10	Employee Attitudes/Behaviour	5,26%	0,00%	0,00%	0,00%	0,00%
11	Employee Commitments	0,00%	0,00%	0,00%	0,00%	0,00%
12	Employee motivation	5,26%	5,26%	5,26%	5,26%	5,26%
13	Employee productivity	21,05%	15,79%	21,05%	21,05%	21,05%
14	Employee Training	10,53%	10,53%	21,05%	21,05%	10,53%
15	Vocational qualifications	5,26%	5,26%	5,26%	5,26%	10,53%
16	Employee development	0,00%	5,26%	10,53%	5,26%	5,26%
17	Employee flexibility	0,00%	0,00%	0,00%	0,00%	0,00%
18	Entrepreneurial spirit	0,00%	0,00%	5,26%	0,00%	0,00%
19	Employee Capabilities	5,26%	5,26%	10,53%	5,26%	0,00%
20	Employee teamwork	0,00%	0,00%	0,00%	0,00%	0,00%
21	Employee involvement with community	10,53%	15,79%	15,79%	15,79%	10,53%
22	Other employee Features	63,16%	63,16%	73,68%	68,42%	78,95%
	Average	14,59%	16,51%	17,70%	18,66%	17,94%
No	ITEMS - RIC					
1	Customers	26,32%	21,05%	26,32%	21,05%	21,05%
2	Market presence	52,63%	68,42%	63,16%	63,16%	63,16%
3	Customer relationships	0,00%	0,00%	0,00%	0,00%	10,53%
4	Customer acquisition	0,00%	5,26%	5,26%	10,53%	5,26%
5	Customer retention	0,00%	0,00%	10,53%	10,53%	5,26%
6	Customer training&education	0,00%	0,00%	0,00%	0,00%	0,00%
7	Customer involvement	5,26%	5,26%	5,26%	5,26%	5,26%
8	Company Image/reputation	10,53%	15,79%	10,53%	15,79%	10,53%
9	Company awards	5,26%	5,26%	5,26%	5,26%	10,53%
10	Public relation	0,00%	0,00%	5,26%	0,00%	10,53%
11	Diffusion&networking	31,58%	31,58%	31,58%	36,84%	26,32%
12	Brands	63,16%	63,16%	63,16%	57,89%	57,89%

13	Distribution channels	47,37%	57,89%	68,42%	68,42%	68,42%
14	Relationship with suppliers	63,16%	68,42%	68,42%	63,16%	68,42%
15	Business collaboration	15,79%	21,05%	21,05%	26,32%	15,79%
16	Business agreements	5,26%	0,00%	0,00%	0,00%	5,26%
17	Favourite contract	5,26%	5,26%	5,26%	5,26%	10,53%
18	Research collaboration	10,53%	15,79%	26,32%	31,58%	31,58%
19	Marketing	10,53%	10,53%	15,79%	15,79%	21,05%
20	Relationship with stakeholders	42,11%	52,63%	57,89%	36,84%	47,37%
21	Market leadership	5,26%	5,26%	5,26%	10,53%	10,53%
	Average	19,05%	21,55%	23,56%	23,06%	24,06%
No	ITEMS - SIC					
1	Intellectual property	63,16%	68,42%	68,42%	68,42%	68,42%
2	Process	0,00%	0,00%	0,00%	0,00%	0,00%
3	Management philosophy	15,79%	21,05%	21,05%	26,32%	21,05%
4	Corporate culture	5,26%	5,26%	5,26%	5,26%	0,00%
5	Organization Flexibility	0,00%	0,00%	0,00%	0,00%	0,00%
6	Organization structure	5,26%	5,26%	5,26%	5,26%	5,26%
7	Organization learning	0,00%	0,00%	0,00%	0,00%	0,00%
8	Research & Development	47,37%	57,89%	57,89%	68,42%	68,42%
9	Innovation	15,79%	10,53%	5,26%	5,26%	5,26%
10	Technology	63,16%	63,16%	52,63%	63,16%	68,42%
11	Financial Relations	10,53%	15,79%	15,79%	15,79%	15,79%
12	Customer support function	0,00%	0,00%	0,00%	0,00%	0,00%
13	Knowledge-based infrastructure	0,00%	0,00%	0,00%	0,00%	0,00%
14	Quality management & improvement	0,00%	0,00%	0,00%	0,00%	5,26%
15	Accreditations (certificate)	31,58%	26,32%	42,11%	36,84%	42,11%
16	Overall infrastructure/capability	15,79%	15,79%	15,79%	15,79%	10,53%
17	Networking	0,00%	0,00%	0,00%	0,00%	0,00%
18	Distribution Network	5,26%	5,26%	5,26%	5,26%	5,26%
	Average	15,50%	16,37%	16,37%	17,54%	17,54%

Source: adapted from Li, Pike and Haniffa (2007)

3. Research questions

As it is well known the most popular indicator to measure knowledge assets at organizational level is the comparison between the market price and the book value. It had been shown that if the market value is higher than the book value then the company hold intellectual assets not presented in the financial statements but if the book value is higher than the market value the company has intellectual liabilities. Although, these measures had been severely criticized for its simplicity, it remains useful to illustrate the value of the company which is not reflected in the accounts (Oliveras and Kasperskaya, 2004). So, starting from this simple fact we have formulated our first research question: *Romanian manufacturing companies hold “hidden values” not reported in the financial statements?*

Also, because we were interested in analysing what information is disclosed about intellectual capital in the annual reports of the sampled companies, our second and third research questions are considering this issue of voluntary disclosure of intellectual capital. After the delimitation of the research instrument and scoring the items disclosed in the annual reports we tried to seek answer to the following questions: *what information regarding intellectual capital are voluntary disclosed by the Romanian manufacturing companies through annual reports?* and *which is the general score of intellectual capital disclosure for these companies?*

4. Discussion of results

As we have mentioned above our work is divided in two main sections. Therefore, we would present and discuss the obtained results and trying to answer the research questions. As regard to the first section of our research we have calculated the market to book value ratio for each sampled company, for the period from 2005 to 2009 and then compared the obtained results to discover those companies which are hold hidden values, meaning intellectual capital or knowledge assets but they do not report this in the financial statements.

In the table bellow can be seen the values of the indicator for each selected company.

Market to book value ratio					Table no. 3	
	2005	2006	2007	2008	2009	Average
AMO	94,06%	127,49%	93,63%	73,51%	22,46%	82,23%
AZO	60,00%	39,00%	30,00%	51,00%	33,00%	42,60%
OLT	340,00%	422,00%	-	-82,00%	-18,00%	112,40%
STZ	11,08%	17,56%	2,48%	2,19%	1,10%	6,88%
ATB	216,78%	351,76%	327,44%	287,38%	103,88%	257,45%
BIO	62,20%	90,86%	204,04%	218,97%	127,98%	140,81%
SCD	175,18%	263,20%	256,05%	87,22%	81,90%	172,71%
MJM	196,05%	178,66%	229,46%	244,56%	250,00%	219,75%
PPL	1,58%	20,44%	50,14%	38,96%	35,84%	29,39%
ROCE	53,74%	76,45%	163,27%	106,22%	61,89%	92,31%
TRP	8,43%	6,88%	34,08%	123,51%	81,31%	50,84%
PREH	63,08%	318,04%	459,34%	95,67%	33,91%	194,01%
CBC	58,60%	46,64%	102,39%	90,91%	22,18%	64,14%
CEON	0,07%	0,03%	0,17%	82,01%	29,25%	22,31%
CMCM	0,20%	0,01%	0,32%	24,95%	23,00%	9,70%
ALR	214,66%	174,13%	395,96%	262,67%	90,97%	227,68%
COS	36,57%	57,33%	233,85%	122,43%	56,18%	101,27%
ART	6,81%	13,12%	62,16%	36,99%	62,15%	36,25%

	2005	2006	2007	2008	2009	Average
ZIM	32,63%	31,17%	58,97%	60,04%	24,84%	41,53%
Average	85,88%	117,62%	137,04%	101,43%	59,15%	100,22%
Standard deviation	0,937314	1,279155	1,451932	0,914754	0,573473	0,77486

Source: authors working

Comparing the results we can see that out of the nineteen selected companies only nine reveal the average of market to book value ratio between 80% and 300%. We are presenting the developments of market to book value ratio in the selected period only for those nine companies.

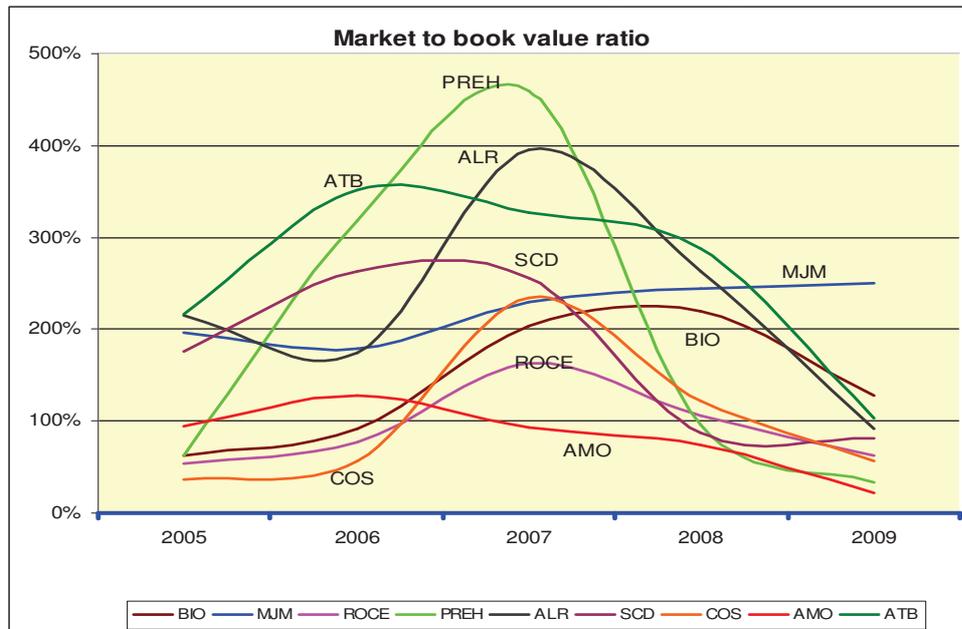


Chart 1 - Market to book ratio for nine companies, on average > 100%

Source: authors working

Looking at the figures we can conclude that only 50% of Romanian manufacturing companies hold intellectual capital assets for the period analysed and also as shown in the chart above for the nine companies that are in “good position” regarding the studied indicator the financial and economic crisis significantly affected the evolution of the “hidden values”. In respect to the intellectual capital disclosure through annual reports we have found that Romanian manufacturing companies mostly disclose information that refers to relational capital gathering aspects mainly about market presence, brands, suppliers and distribution channels.

Table no. 4 presents the descriptive statistics for the extent of human, relational and structural capital information disclosed in the companies’ annual reports. The broadened information disclosed targets the relational capital aspects of the firms.

Statistics of the intellectual capital information disclosed in annual reports **Table no. 4**

	Year	2005	2006	2007	2008	2009	Average
	ICD-Annual average	16,38%	18,15%	19,21%	19,75%	19,85%	18,67%
HIC	HIC average	14,59%	16,51%	17,70%	18,66%	17,94%	17,08%
	Median	5,26%	5,26%	5,26%	5,26%	5,26%	5,26%
	Std. deviation	25,47%	26,80%	27,25%	27,79%	29,54%	27,21%
	Minimum	0,00%	0,00%	0,00%	0,00%	0,00%	0,00%
	Maximum	94,74%	100,00%	100,00%	100,00%	100,00%	98,95%
RIC	RIC average	19,05%	21,55%	23,56%	23,06%	24,06%	22,26%
	Median	10,53%	10,53%	10,53%	15,79%	10,53%	12,63%
	Std. deviation	21,33%	24,25%	24,40%	22,48%	22,25%	22,64%
	Minimum	0,00%	0,00%	0,00%	0,00%	0,00%	0,00%
	Maximum	63,16%	68,42%	68,42%	68,42%	68,42%	66,32%
SIC	SIC average	15,50%	16,37%	16,37%	17,54%	17,54%	16,67%
	Median	5,26%	5,26%	5,26%	5,26%	5,26%	5,26%
	Std. deviation	20,87%	22,39%	22,11%	24,12%	24,93%	22,73%
	Minimum	0,00%	0,00%	0,00%	0,00%	0,00%	0,00%
	Maximum	63,16%	68,42%	68,42%	68,42%	68,42%	67,37%

Source: authors working

The descriptive statistic for intellectual capital disclosure index is presented in *table no. 5*

Intellectual capital disclosure (ICD) statistics **Table no. 5**

Year	2005	2006	2007	2008	2009	Average
Score ICD (%)	16,39%	18,21%	19,33%	19,84%	19,93%	18,74%
ICD Standard deviation	9,87%	8,69%	9,46%	8,53%	8,49%	8,32%
ICD Minimum Score	0,00%	6,56%	4,92%	6,56%	8,20%	6,56%
ICD Maximul Score	40,98%	42,62%	44,26%	40,98%	47,54%	43,28%

Source: authors working

As can be easily seen in the chart below the ICD index in average is between 20 and 45% for only six companies from the sample.

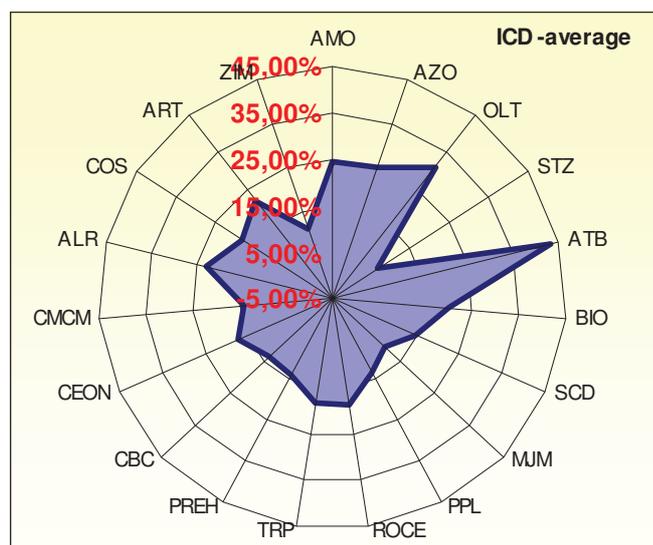


Chart 2 - Companies' ICD index related to ICD average
 Source: authors working

The preliminary findings of the content based analysis of the complete annual reports of the selected Romanian manufacturing companies over the five year period seem to suggest that although the level of disclosure has in average increased over time, this is mainly in a descriptive or narrative way. Also, as it can be observed from the table no. 5 the level of intellectual capital disclosure remains still low. However, it is worth mentioning that ICD in 2009 almost covers the voluntary disclosure index of all previous years. Arguments for this fact lies in general trend of growth of ICD for all selected companies because of the improved communication related to non-financial intellectual capital information. The chart bellow captures this trend of ICD for the sampled companies.

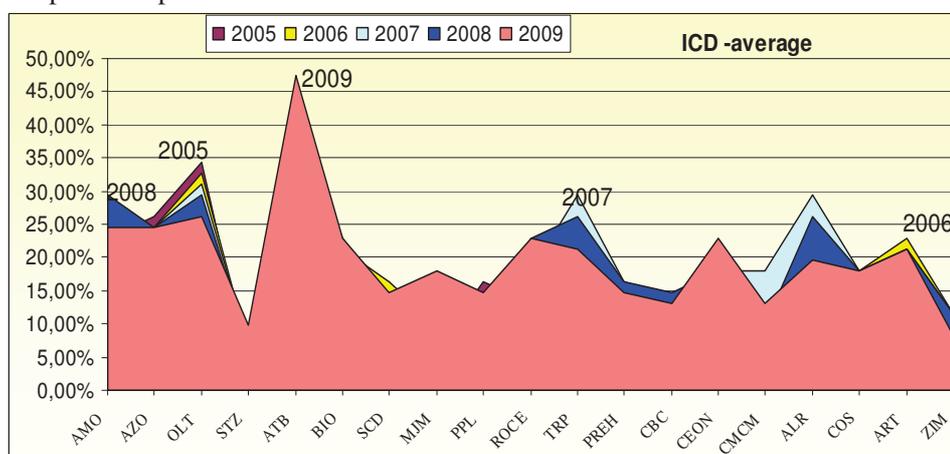


Chart 3 – ICD index evolution for selected companies
 Source: authors working

5. Conclusions, practical implications and research limitations

This paper seeks to identify if Romanian manufacturing companies are interested in reporting intellectual capital information and focuses on analyzing which aspects concerning intellectual capital are voluntarily reported by these firms in annual reports. In order to capture the ways in

which knowledge assets or hidden values are reported by these firms we performed a review on the measurement models of intellectual capital found in the literature. Then we analyzed the value of intellectual capital using market to book value ratio evolution over the considered period for the sampled companies. Our results showed an interesting trend, meaning after an increase by 2007 was recorded a general decrease in the "hidden value" of selected companies, probably due to the financial crisis and general trends in stock market. Regarding the practical implications of our approach in respect to measure the intellectual capital over the five considered years, financial analysts and other experts in our opinion will be able to understand better the way firms create added value and how this value can be related to business performance and a modern financial reporting.

This study also focuses on the analysis of annual reports from 19 listed Romanian manufacturing companies over a five year period, from 2005 to 2009. Our goal was to construct an intellectual capital disclosure index based on the content-analysis of the annual reports. We found that in average the voluntary intellectual capital disclosure index had increased for the selected companies from year to year, what we believe that is a positive signal to stakeholders. However, the level of disclosure of hidden values remains still low. This behavior towards low voluntary disclosure can be explained in our vision by the fact that Romanian market is an emerging small market in which capital market fund raising is not regarded to be important source of financing and there is poor enthusiasm from companies for modern, transparent reporting and permanently seeking to satisfy the various information needs of different users. As a major conclusion of our research emerges the fact that Romanian manufacturing companies show low interest for reporting intellectual capital with few exceptions.

Our paper based provides insights to the components of intellectual capital voluntarily disclosed through annual reports and the conducted analysis of the items disclosed is cross-sectional. As a limit of our research we consider is the small sample size but it is unavoidable because the small Romanian capital market. Another limit that can be overcome in future studies is concerning the factors that influence the level of voluntary disclosure of intellectual capital information in annual reports of Romanian manufacturing listed companies. We are motivated to continue this research by the recent recommendations of international regulators and researchers that are encouraging companies to improve their business reporting by making extensive voluntary disclosures of information about knowledge assets.

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